VSCOdeGirls -- Tanzim Elahi, Jesse Hall, Ray Lee, Vishwaa Sofat
SoftDev1 pd1
P01 -- Task the First: The Plan
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Version 0

TERMS OF AGREEMENT (TOA):

1. Flask will serve as your web microframework.
2. Multiple supporting Python3 files will be used as necessary.
3. Bootstrap or Foundation will be used as your front-end framework.
4. You will provide your own customized CSS where appropriate/necessary.
5. You will make meaningful use (sum > parts) of at least three (3) REST APIs, chosen from Ye Olde SoftDev API KB.

FRAMEWORKS:

- HTML/CSS
- BootStrap
- Flask/Python3
- SQLite

APIs (API name/Pain factor):

- OpenSky Network API/?
- Accuweather/2
- IPLocation/0

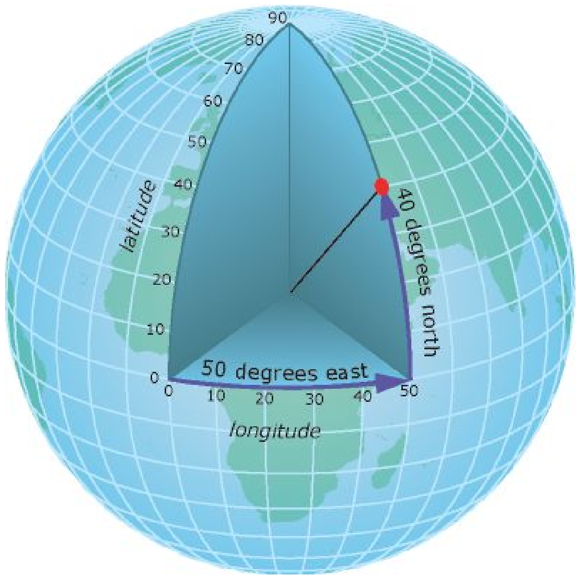
Minimum Viable Product (MVP)—TOA:number(s) in parentheses corresponds with the number in the terms of agreement above that it fulfills

- Create a flask app (TOA:1) that queries the REST APIs listed above to display nearby planes around a user's IP location or a custom set location (TOA:5).
- BootStrap and custom CSS used to liven up the page and make it look visually appealing (TOA:3,4)
- Use the Google custom search API to scrape for images related to the plane model of a certain nearby flight (TOA:5)
- SQLite will be used as a cache to store previously scraped images of a certain plane model in order to be more efficient and not query API as much (TOA:2, using python3 files to construct the database)
- updateLog.py is used to automate the log updating process (credits to Junhee Lee, who is the author of the script; TOA:2)

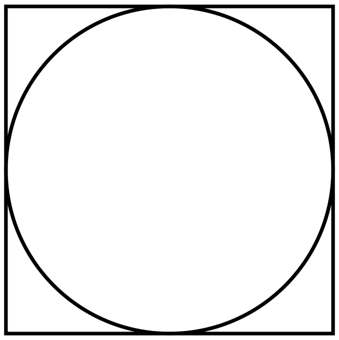
LIST OF COMPONENTS

- Navigation between pages
    - Fixed top navbar

    - Navbar buttons lead to different routes → displaying nearby planes around a custom address
- Search bar (“Search for nearby flights”)
- Home screen - displays nearest planes within a certain user-defined radius around the approximate IP location of the user OR a custom set location
    - Dropdown menu → choose between pivoting radius around IP location or custom set location
    - Radius in miles (min: 10, max: 50; user-defined) → text box where user enters an integer that represents radius in miles
    - “Search for nearby flights” button → displays a list of nearby flights upon click, under a map that shows the location of the user as a generated image of a map
        - Each of the nearby planes is displayed as a text box (using BootStrap) below the map of the homescreen after the user enters a radius and presses “Search for nearby flights”
        - Each text box has a link to a route/generated page that displays specific information about the flight, plane model, model image, and other miscellaneous information
        - If the model has never been searched before, its image can be retrieved using Google custom search API. Otherwise, its image will be retrieved from cached data (image URLs) from the SQLite database.
    - Since the OpenSky API only takes in maximum and minimum latitude and longitude as parameters to define a rectangular area to search planes in, we must define this rectangular area into a square that also fits with the user-defined radius. After we have successfully queried the planes in the square area, we remove the planes whose distance from the user is greater than the radius.



        - Ex:
        - Range of latitude: [0; 90] degrees
        - Range of longitude: [0; 180] degrees

        - To get maximum and minimum latitude: user's latitude ± radius * (1 degree / 68.703 miles)
        - For maximum and minimum longitude: user's longitude ± radius * (1 degree / 68.703miles)
    - 
    - We must consider the edge case around the poles since the user-defined radius when the user is near the poles covers the latitude from their location up to the pole and over to the other side. Thus, we limit the upper bound of the latitude when the user-defined radius overflows near the north pole and limit the lower bound of the latitude when the user-defined radius overflows near the south pole.
        - 1 degree = 68.703 miles
        - At the north or south pole overflow, when the maximum or minimum latitude is >90 (respectively), fix the bounds to 90.
        - Longitude does not really have much complexities because when you reach 0 or 180, the bounds of longitude go back to 180 and 0, respectively.
        -

TASKS

- Tanzim
- Jesse
    - Using OpenSky to query area for nearby planes
- Ray (Project Manager)
    - Python skeleton
    - HTML skeleton (base.html and Jinja stuff)
    - BootStrap and custom CSS design
    - Help Jesse with OpenSky API
- Vishwaa

COMPONENT MAP

SITE MAP